



DEEP CYCLE GEL BATTERY

ES-250 GEL



MADE IN VIETNAM

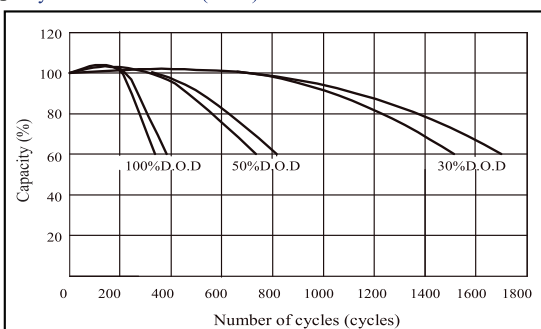
Special Features :

- Superior deep cycle design
- Very long life in deep cycle applications
- Superior recovery from deep discharge
- Wide working environment

Specifications

| | | |
|-----------------------|--------------|------------------------|
| Nominal voltage | | 12V (6 cells per unit) |
| Rated capacity (10HR) | | 250Ah/10.8V |
| Dimensions | Length | 521±2mm (52.1 cm) |
| | Width | 269±2mm (26.9 cm) |
| | Height | 220±2mm (22 cm) |
| | Total height | 224±2mm (22.4 cm) |
| Approx. weight | | 74.50kg (164.27lbs)±3% |

Cycle life on D.O.D (25°C)



Applications :



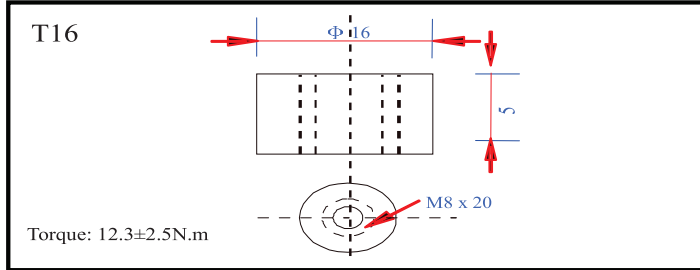
Certifications :



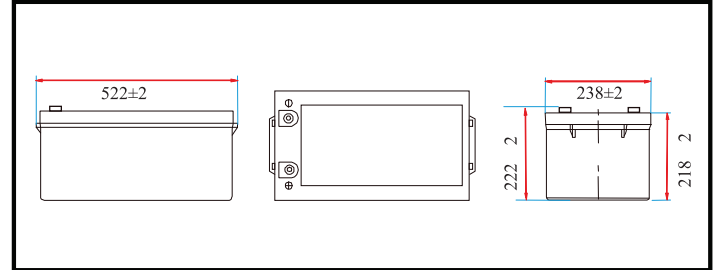
Characteristics

| | | |
|---|---|--|
| Capacity (25°C) | 10HR (10.8V) | 250Ah |
| | 3HR (10.8V) | 187.5Ah |
| | 1HR (10.5V) | 140Ah |
| Terminal type | | T16 |
| Internal resistance (Fully charged, 25°C) | | Approx. 2.8mΩ |
| Capacity affected by temperature (10HR) | 40°C | 102% |
| | 25°C | 100% |
| | 0°C | 85% |
| | -15°C | 65% |
| Self-discharge (25°C) | 3 months | Remaining capacity: 91% |
| | 6 months | Remaining capacity: 82% |
| | 12 months | Remaining capacity: 65% |
| Nominal operating temperature | | 25°C± 3°C (77°F± 5°F) |
| Operating temperature range | Discharge | - 15°C~ 50°C (5°F ~ 122°F) |
| | Charge | - 10°C~ 50°C (14°F ~ 122°F) |
| | Storage | - 20°C~ 50°C (-4°F ~ 122°F) |
| Float charging voltage (25°C) | | 13.50 to 13.80V Temperature compensation: -18mV/°C/Block |
| Cycle charging voltage (25°C) | | 14.50 to 14.70V Temperature compensation: -30mV/°C/Block |
| Cycle Life | | >750 cycles @ 0.2C 50% DOD. |
| Maximum charging current | | 50 A |
| Pulse discharge current | | 1500 A (5 Sec.) |
| Design life | 12 years for floating (25°C) | |
| | Eurobat (20°C): 10-12 years, long life. | |

Terminal type (mm)



Outer dimensions (mm)



Construction

| Component | Positive plate | Negative plate | Container | Cover | Separator | Electrolyte | Safety valve | Terminal |
|--------------|----------------|----------------|-----------|-------|-----------|-------------|--------------|----------|
| Raw material | Lead dioxide | Lead | ABS | ABS | AGM | Gel | Rubber | Copper |

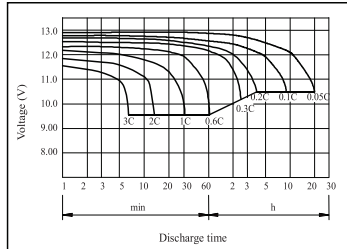
Constant current discharge characteristics unit: Ampere/Cell (at 25°C, 77°F)

| F.V/Time | 15min | 30min | 60min | 2h | 3h | 4h | 5h | 6h | 8h | 10h | 20h |
|----------|-------|-------|-------|------|------|------|------|------|------|------|------|
| 9.60V | 400 | 243 | 150 | 91.4 | 65.0 | 51.0 | 43.4 | 38.3 | 30.6 | 25.5 | 13.5 |
| 9.90V | 390 | 238 | 148 | 90.8 | 64.6 | 50.7 | 43.1 | 38.0 | 30.4 | 25.4 | 13.5 |
| 10.2V | 376 | 230 | 144 | 90.0 | 64.2 | 50.4 | 42.8 | 37.8 | 30.2 | 25.3 | 13.4 |
| 10.5V | 363 | 225 | 140 | 88.7 | 63.8 | 50.0 | 42.5 | 37.5 | 30.0 | 25.2 | 13.3 |
| 10.8V | 344 | 217 | 135 | 86.4 | 62.5 | 48.5 | 41.2 | 36.4 | 29.1 | 25.0 | 13.3 |

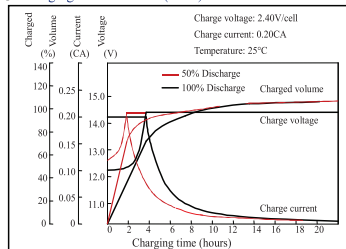
Constant power discharge characteristics unit: Watt/Cell (at 25°C, 77°F)

| F.V/Time | 15min | 30min | 60min | 2h | 3h | 4h | 5h | 6h | 8h | 10h | 20h |
|----------|-------|-------|-------|------|-----|-----|-----|-----|-----|-----|-----|
| 9.60V | 4392 | 2721 | 1710 | 1058 | 765 | 600 | 512 | 452 | 364 | 304 | 162 |
| 9.90V | 4287 | 2666 | 1684 | 1052 | 760 | 596 | 509 | 449 | 361 | 303 | 162 |
| 10.2V | 4128 | 2585 | 1642 | 1042 | 755 | 592 | 506 | 446 | 359 | 302 | 161 |
| 10.5V | 3988 | 2522 | 1590 | 1027 | 750 | 588 | 502 | 443 | 356 | 301 | 160 |
| 10.8V | 3777 | 2430 | 1539 | 1001 | 735 | 570 | 487 | 430 | 346 | 299 | 159 |

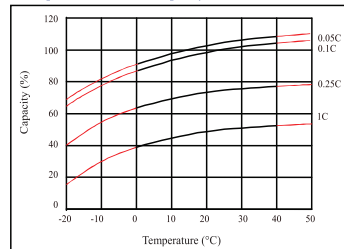
Discharge characteristics (25°C)



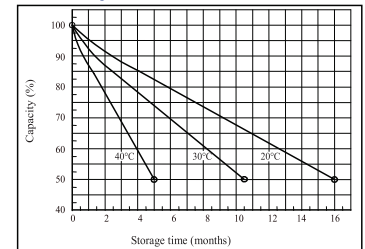
Charging characteristics (25°C)



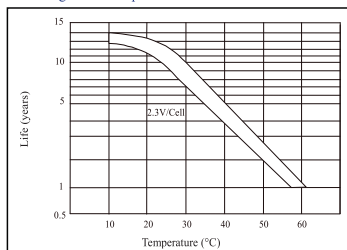
Temperature effects on capacity



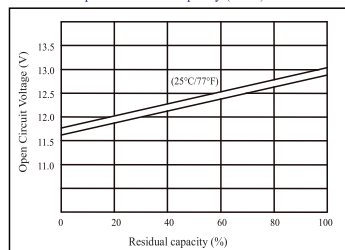
Self-discharge characteristics



Floating life on temperature



Relationship for OCV and capacity (25°C)



Relationship for charging voltage and temperature

